

Shared w Mike R.
9/30/87

JUL 1 1987

1263828 - R8 SDMS

EXHIBIT 1-1

SELECTED CHEMICAL-SPECIFIC ARAR REQUIREMENTS a/

Probable ARAR Requirements b/

For Use In Special Circumstances

CWA Ambient Water Quality Criteria for Protection of Aquatic Life c/

Chemical Name	RCRA Maximum Concentration Limit (MCL) (mg/l)	SDWA Maximum Contaminant Level (MCL) (mg/l)	Freshwater Acute/Chronic (mg/l)	Marine Acute/Chronic (mg/l)	SDWA/MCL Goal (mg/l) d/
Acenaphthene			1.7**/0.5**	0.9**/0.7**	
Acenaphthylene				3.0E-01**	
Acrolein			6.8E-02**/2.1E-02**	5.5E-02**	
Acrylonitrile			7.5**/2.6**		
Aldrin			3.0E-03	1.3E-03	
Anthracene					
Antimony and Compounds			9.0/1.6		
Arsenic and Compounds	5.0E-02 g/	5.0E-02			
Arsenic (V) and Compounds			0.8**/4.8E-02**	2.3**/1.3E-02	
Arsenic (III) and Compounds			0.3/0.1	6.9E-02/3.6E-02	
Asbestos					7.1E+06 fibers/l*
Barium and Compounds	1.0	1.0			1.5*
Benz(a)anthracene					
Benz(c)acridine					
Benzene		5.0E-03*	5.3**	5.1**/0.7**	0
Benidine			2.5**		
Benzo(a)pyrene					
Benzo(b)fluoranthene					
Benzo(ghi)perylene					
Benzo(k)fluoranthene					
Beryllium and Compounds			0.1**/5.3E-03**		
Bis(2-chloroethyl)ether					
Bis(2-chloroisopropyl)ether					
Bis(chloromethyl)ether					
Cadmium and Compounds	1.0E-02	1.0E-02	3.9E-03+/1.1E-03+	4.3E-02/9.3E-03	5.0E-03*
Carbon Tetrachloride		5.0E-03*	3.5E+01	5.0E+01	0
Chlordane			2.4E-03/4.3E-06	4.0E-06/9.0E-05	
Chlorinated Benzenees			2.5E-01**/5.0E-02**	1.6E-01**/1.2E-01**	
Chlorinated Naphthalenes			1.6**	7.5E-03**	
Chloroalkyl Ethers			2.3E+02**		
Chlorobenzene (Mono)			0.2**/5.0E-02**	0.1**/0.1**	
Chlorodibromomethane		1.0E-01			
Chloroform		1.0E-01	2.8E+01**/1.2**		
2-Chlorophenol			4.3**/2.0**		
Chromium III and Compounds			1.7+/0.2+	1.0E+01	
Chromium VI and Compounds	5.0E-02	5.0E-02	1.6E-02/1.1E-02	1.1/5.0E-02	1.2E-03*
Copper and Compounds			1.8E-02+/1.2E-02+	2.9E-03/2.9E-03	1.3*
Cyanides			2.2E-02/5.2E-03	1.0E-03/1.0E-03	
DDT			1.1E-03/1.0E-06	1.3E-04/1.0E-06	
Dibutyl Phthalate			9.4E-01**/3.0E-03**	2.9**/3.4E-03**	

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ADMINISTRATIVE RECORD
SF FILE NUMBER
1050900

EXHIBIT 1-1 (continued)
 SELECTED CHEMICAL-SPECIFIC ARAR REQUIREMENTS a/

Chemical Name	Probable ARAR Requirements b/				For Use In Special Circumstances
	CWA Ambient Water Quality Criteria for Protection of Aquatic Life c/				SDWA/MCL Goal (mg/l) d/
	RCRA Maximum Concentration Limit (MCL) (mg/l)	SDWA Maximum Contaminant Level (MCL) (mg/l)	Freshwater Acute/Chronic (mg/l)	Marine Acute/Chronic (mg/l)	
Dichlorobenzenes			1.1**/7.6E-01**	1.9**	
1,2-Dichlorobenzene					6.2E-01*
1,3-Dichlorobenzene					
1,4-Dichlorobenzene		7.5E-01*			7.5E-01
3,3'-Dichlorobenzidine					
1,2-Dichloroethane (EDC)		5.0E-03*	1.1E+02**/2.0E+01**	1.1E+02**	0
Dichloroethylenes			1.1E+01**	2.2E+01**	
1,1-Dichloroethylene		7.0E-03*	1.1E+01**	2.2E+02**	7.0E-03
2,4-Dichlorophenol			2.0**/0.3**		
2,6-Dichlorophenol					
3,4-Dichlorophenol					
2,3-Dichlorophenol					
2,5-Dichlorophenol					
2,4-Dichlorophenoxyacetic Acid (2,4-D)	1.0E-01	1.0E-01			7.0E-03
1,3-Dichloropropene			6.0**/0.2**	0.7**	
Dieldrin			2.5E-03/1.9E-06	0.7E-03/1.9E-06	
Diethylphthalate					
Bis(2-ethylhexyl)phthalate (DEHP)					
Diethylnitrosamine					
7,12-Dimethylbenz(a)anthracene					
Dimethylnitrosamine		0 (1.4E-06)			
2,4-Dimethylphenol			2.1**		
Dimethylphthalate					
4,6-Dinitro-o-cresol					
2,4-Dinitrophenol					
1,2-Diphenylhydrazine					
Endosulfan			2.2E-04/5.6E-05	3.4E-05/8.7E-06	
Endrin	2.0E-04	2.0E-04	1.8E-04/2.3E-06	3.7E-05/2.3E-06	
Ethylbenzene			3.2E+01	4.3E-01**	6.8E-01*
Fluoranthene			3.9**	4.0E-02**/1.6E-02**	
Fluorides		4.0			
Heptachlor			5.2E-04/3.8E-06	5.3E-05/3.6E-06	0*
Hexachlorobenzene					
Hexachlorobutadiene			9.0E-02**/9.3E-03**	3.2E-02**	
alpha-Hexachlorocyclohexane (HCCH)					
gamma-HCCH (Lindane)		4.0E-03			2.0E-04*
Technical-HCCH					
Hexachlorocyclopentadiene			7.0E-03**/5.2E-03**	7.0E-03**	
Hexachloroethane			9.8E-02**/5.4E-02**	9.4E-02**	
Iodomethane					

EXHIBIT 1-1 (continued)
 SELECTED CHEMICAL-SPECIFIC ARAR REQUIREMENTS a/

Chemical Name	Probable ARAR Requirements b/				for Use In Special Circumstances
	RCRA Maximum Concentration Limit (MCL) (mg/l)	SDWA Maximum Contaminant Level (MCL) (mg/l)	CWA Ambient Water Quality Criteria for Protection of Aquatic Life c/		SDWA/MCL Goal (mg/l) d/
			Freshwater Acute/Chronic (mg/l)	Marine Acute/Chronic (mg/l)	
Isophorone			1.17E+02**	1.2E+01**	
Lead and Compounds (Inorganic)	5.0E-02	5.0E-02	8.2E-03+/3.2E-03+	0.1/5.6E-03	2.0E-02*
Mercury and Compounds (Alkyl)		2.0E-03	2.4E-03/1.2E-05	2.14E-03/2.5E-05	3.0E-03*
Mercury and Compounds (Inorganic)	2.0E-03	2.0E-03	2.4E-03/1.2E-05	2.1E-03/2.5E-05	3.0E-03*
Methoxychlor		1.0E-01	0.3E-04**	0.3E-04**	
Methyl Chloride					
2-Methyl-4-chlorophenol					
3-Methyl-4-chlorophenol					
3-Methyl-6-chlorophenol					
3-Monochlorophenol					
4-Monochlorophenol					
Nickel and Compounds	1.34E-02		1.8+/9.6E-02+	0.1/7.1E-03	
Nitrate (as N)	1.0E+01	1.0E+01*			
Nitrobenzene			2.7E+01**	6.6	
Nitrophenols			2.3E-01**/1.5E-01**	4.8**	
Nitrosamines			5.8**	3.3E+03**	
n-Nitrosodiphenylamine					
N-Nitrosopyrrolidine					
Pentachlorinated Ethanes			7.2**/1.1**	3.9E-01**/2.8E-01**	
Pentachlorobenzene			2.5E-01**/5.0E-02**	1.6E-01**/1.2E-01**	
Pentachlorophenol			5.5E-02/3.2E-03	5.3E-02/3.4E-04	2.2E-01*
Phenanthrene				3.0E-01**	
Phenol			1.0E+01/2.5	5.8	
Phthalate Esters			9.4E-01**/3.0E-03**	2.9**/3.4E-03**	
Polychlorinated Biphenyls (PCBs)			2.0E-03/1.4E-05	1.0E-02/3.0E-05	
Radionuclides, Gross alpha activity		15 pCi/l			0*
Radium 226 and 228		5 pCi/l			
Selenium and Compounds	1.0E-02	1.0E-02	2.6E-01/3.5E-02	4.1E-01/5.4E-02	4.5E-02*
Silver and Compounds	5.0E-02	5.0E-02	4.1E-03+/1.2E-04	2.3E-03	
Strontium-90		8 pCi/l			
2,3,7,8-TCDD (Dioxin)			1.0E-05**/5.6E-06**		
Tetrachlorinated Ethanes			9.3**		
1,2,4,5-Tetrachlorobenzene					
1,1,2,2-Tetrachloroethane			2.4**	9.0**	
Tetrachloroethanes			9.3**		
Tetrachloroethylene			5.2**/8.4E-01**	1.0E+01**/4.5E-01**	0*
2,3,4,6-Tetrachlorophenol				4.4E-01	
Thallium and Compounds			1.4**/4.0E-02**	2.1E-03**	
Toluene			1.7E+01**	6.3**/5.0**	2*
Toxaphene	5.0E-03	5.0E-03	1.6E-03/1.3E-05	7.0E-05	0*

EXHIBIT, 1-1 (continued)

SELECTED CHEMICAL-SPECIFIC ARAR REQUIREMENTS a/

Chemical Name	Probable ARAR Requirements <u>b/</u>					For Use In Special Circumstances
	RCRA Maximum Concentration Limit (MCL) (mg/l)	SDWA Maximum Contaminant Level (MCL) (mg/l)	CWA Ambient Water Quality Criteria for Protection of Aquatic Life <u>c/</u>			SDWA/MCL Goal (mg/l) <u>d/</u>
			Freshwater Acute/Chronic (mg/l)	Marine Acute/Chronic (mg/l)		
Tribromomethane (Bromoform)		1.0E-01				
Trichlorinated Ethanes			1.8E+01**			
1,1,1-Trichloroethane		2.0E-01*		3.1E+01**		2.0E-01
1,1,2-Trichloroethane						
Trichloroethylene		5.0E-03*	4.5E+01**/2.1E+01**	2.0**		0
Trichloromonofluoromethane						
2,4,5-Trichlorophenol						5.2E-02*
2,4,6-Trichlorophenol			9.7E-01**			
2,4,5-Trichlorophenoxypropionic Acid	1.0E-02	1.0E-02				
Trihalomethanes (Total) <u>b</u>		1.0E-01				
Iritium		20,000 pCi/l				
Vinyl Chloride		1.0E-03*				0
Zinc and Compounds			3.2E-01+/4.7E-02+	1.7E-01/5.8E-02		

a/ Additional chemical-specific requirements will be added (e.g. National Ambient Air Quality Criteria) after analysis of additional statutes.

b/ When two or more values conflict, the lower value generally should be used.

c/ Federal water quality criteria (FWQC) more stringent than a SDWA MCL may be found relevant and appropriate when there are environmental factors that are being considered at a site, such as protection of aquatic organisms. The agency is still formulating a position with respect to the use of FWQC for human health.

d/ For water that is to be used for drinking, the MCLs set under the SDWA are generally the applicable or relevant and appropriate standard. A standard for drinking water more stringent than an MCL may be needed in special circumstances, such as where multiple contaminants in ground water or multiple pathways of exposure present extraordinary risks. In setting a level more stringent than the MCL in such cases, a site-specific determination should be made by considering MCLs, the Agency's policy on the use of appropriate risk ranges for carcinogens, levels of quantification, and other pertinent guidelines. Prior consultation with Headquarters is encouraged in such cases.

e/ Notation converts as follows: $E-02 = 10^{-2}$; $E-03 = 10^{-3}$; etc.

* proposed value as of October 1986.

** lowest Observed Effect level.

+ Hardness dependent criteria (100 mg/l used).

Sources: U.S. EPA, Superfund Public Health Evaluation Manual, EPA 540/1-86/060 (OSWER Directive 9285.4-1) October 1986 and U.S. EPA, Quality Criteria for Water 1986, EPA 440/5-86-001, May 1986 (51 Federal Register 43665).

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SELECTED LOCATION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

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Location	Requirement	Prerequisite(s)	Citation
Within 61 meters (200 feet) of a fault displaced in Holocene time	New treatment, storage or disposal of hazardous waste prohibited	RCRA hazardous waste; treatment, storage, or disposal	40 CFR 264.18(a)
Within 100-year floodplain	Facility must be designed, constructed, operated, and maintained to avoid washout	RCRA hazardous waste; treatment, storage, or disposal	40 CFR 264.18(b)
Within flood plain	Action to avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values	Action that will occur in a floodplain, i.e., lowlands, and relatively flat areas adjoining inland and coastal waters and other flood prone areas	Executive Order 11988, Protection of Floodplains, (40 CFR 6, Appendix A)
Within salt dome formation, underground mine, or cave	Placement of non-containerized or bulk liquid hazardous waste prohibited	RCRA hazardous waste; placement	40 CFR 264.18(c)
Within area where action may cause irreparable harm, loss, or destruction of significant artifacts	Action to recover and preserve artifacts	Alteration of terrain that threatens significant scientific, prehistorical, historical, or archeological data	National Archeological and Historical Preservation Act (16 U.S.C. Section 469); 36 CFR Part 65
Historic project owned or controlled by federal agency	Action to preserve historic properties; planning of action to minimize harm to National Historic Landmarks	Property included in or eligible for the National Register of Historic Places	National Historic Preservation Act Section 106 (16 USC 470 <u>et seq.</u>); 36 CFR Part 800
Critical habitat upon which endangered species or threatened species depends	Action to conserve endangered species or threatened species, including consultation with the Department of Interior	Determination of endangered species or threatened species	Endangered Species Act of 1973 (16 USC 1531 <u>et seq.</u>); 50 CFR Part 200, 50 CFR Part 402
Wetland	Action to minimize the destruction, loss, or degradation of wetlands	Wetland as defined by Executive Order 11990 Section 7	Executive Order 11990, Protection of Wetlands, (40 CFR 6, Appendix A)
Wetland	Action to prohibit discharge of dredged or fill material into wetland without permit		Clean Water Act Section 404; 40 CFR Parts 230, 231
Wilderness area	Area must be administered in such manner as will leave it unimpaired as wilderness and to preserve its wilderness character	Federally-owned area designated as wilderness area	Wilderness Act (16 USC 1131 <u>et seq.</u>); 50 CFR 35.1 <u>et seq.</u>

EXHIBIT 1-2 (Continued)

SELECTED LOCATION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Location	Requirement	Prerequisite(s)	Citation
Wildlife refuge	Only actions allowed under the provisions of 16 USC Section 668 dd(c) may be undertaken in areas that are part of the National Wildlife Refuge System	Area designated as part of National Wildlife Refuge System	16 USC 668dd et seq.; 50 CFR Part 27
Area affecting stream or river	Action to protect fish or wildlife	Diversion, channeling or other activity that modifies a stream or river and affects fish or wildlife	Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.); 40 CFR 6.302
Within area affecting national wild, scenic, or recreational river	Avoid taking or assisting in action that will have direct adverse effect on scenic river	Activities that affect or may affect any of the rivers specified in section 1276(a)	Scenic Rivers Act (16 U.S.C. 1271 et seq. section 7(a)); 40 CFR 6.302(e)
Within coastal zone	Conduct activities in manner consistent with approved State management programs	Activities affecting the coastal zone including lands thereunder and adjacent shorelands	Coastal Zone Management Act (16 U.S.C. Section 1451 et seq.)
Oceans or waters of the United States	Action to dispose of dredge and fill material into ocean waters is prohibited without a permit	Oceans and waters of the United States	Clean Water Act Section 404 40 CFR 125 Subpart M; Marine Protection Resources and Sanctuary Act Section 103

a/ Additional location-specific requirements will be added after analysis of additional sources and will be included in a subsequent draft of this manual.

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SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Air Stripping	<u>Proposed</u> standards for control of emissions of volatile organics. [CAA requirements to be provided.]	Proposed standard; not yet ARAR.	52 FR 3748 (Feb. 5, 1987)
Capping 264.228(a)	Placement of a cap over waste (e.g., closing a landfill, or closing a surface impoundment or waste pile as a landfill, or similar action) requires a cover designed and constructed to: o Provide long-term minimization migration of liquids through the capped area; o Function with minimum maintenance; o Promote drainage and minimize erosion or abrasion of the cover; o Accommodate settling and subsidence so that the cover's integrity is maintained; and o Have a permeability less than or equal to the permeability of any bottom liner system or natural sub-soils present.	RCRA hazardous waste placed at site after November 19, 1980, or movement of hazardous waste from one unit, area of contamination, or location into another unit or area of contamination will make requirements applicable. Capping without such movement will not make requirements applicable, but technical requirements are likely to be relevant and appropriate.	40 CFR (Surface Impoundments) 40 CFR 264.258 (b) (Waste Piles) 40 CFR 264.310(a) (Landfills)
	Eliminate free liquids, stabilize wastes before capping (surface impoundments).		40 CFR 264.228(a)
	Restrict post-closure use of property as necessary to prevent damage to the cover.		40 CFR 264.117(c)
	Prevent run-on and run-off from damaging cover.		40 CFR 264.228(b) 40 CFR 264.310(b)
	Protect and maintain surveyed benchmarks used to locate waste cells (landfills, waste piles).		40 CFR 264.310(b)

a/ Currently only RCRA, CWA, and SDWA requirements. Additional action-specific requirements will be added as additional statutes are analyzed.

b/ Action alternatives from ROD keyword index.

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Clean Closure (Removal)	General performance standard requires minimization of need for further maintenance and control; minimization or elimination of post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products.	RCRA hazardous waste (listed or characteristic) placed at site after November 19, 1980, or movement of hazardous waste from one unit, area of contamination, or location into another unit or area of contamination. Not applicable to material undisturbed since November 19, 1980.	40 CFR 264.111
	Disposal or decontamination of equipment, structures, and soils.	May apply to surface impoundment; contaminated soil, including soil from dredging or soil disturbed in the course of drilling or excavation, and returned to land.	40 CFR 264.111
	Removal or decontamination of all waste residues, contaminated containment system components (e.g., liners, dikes), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and management of them as hazardous waste.		40 CFR 264.228 (a)(1) and 40 CFR 264.258
	Meet health-based levels at unit.		40 CFR 244.111
Closure with Waste in Place (Capping)	Eliminate free liquids by removal or solidification.	Disposal of RCRA hazardous waste (listed or characteristic) at site after November 19, 1980, or movement of hazardous waste from one unit, area of contamination, or location into another unit or area of contamination. Not applicable to material undisturbed since November 19, 1980.	40 CFR 264.228 (a)(2)
	Stabilization of remaining waste and waste residues to support cover.		40 CFR 264.228 (a)(2) and 40 CFR 264.258(b)
	Installation of final cover to provide long-term minimization of infiltration.		40 CFR 264.310
	Post-closure care and ground-water monitoring.		40 CFR 264.310

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Closure with Waste in Place (Hybrid Closure)	Removal of majority of contaminated materials.	Proposed rule, not yet applicable.	52 FR 8712 (March 19, 1987)
	Application of cover and post-closure monitoring based on exposure pathway(s) of concern.	Proposed rule, not yet applicable.	52 FR 8712 (March 19, 1987)
Consolidation	Area from which materials are removed should be cleaned up.	Movement of hazardous waste (listed or characteristic) from one unit or area of contamination into another. Consolidation within a unit or area of contamination does not trigger applicability.	See closure.
	Consolidation in storage piles/storage tanks will trigger storage requirements.		See Container Storage, Tank Storage, Waste Piles in this Exhibit.
	Placement on or in land outside unit boundary or area of contamination will trigger land disposal requirements and restrictions.	Placement of RCRA hazardous wastes subject to land disposal restrictions.	40 CFR 268 (Subpart D)

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Container Storage (On-Site)	Containers of hazardous waste must be:	RCRA hazardous waste (listed or characteristic) held for a temporary period before treatment, disposal, or storage elsewhere, (40 CFR 264.10) in a container (i.e., any portable device in which a material is stored, transported, disposed of, or handled)(40 CFR 264.10).	
	o Maintained in good condition;		40 CFR 264.171
	o Compatible with hazardous waste to be stored; and		40 CFR 264.172
	o Closed during storage (except to add or remove waste).		40 CFR 264.173
	Inspect container storage areas weekly for deterioration.		40 CFR 264.174
	Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10% of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system.		40 CFR 264.175
	Keep containers of ignitable or reactive waste at least 50 feet from the facility's property line.		40 CFR 264.176
	Keep incompatible materials separate. Separate incompatible materials stored near each other by a dike or other barrier.		40 CFR 264.177
	At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers, liners.		40 CFR 264.178

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Containment (Construction of New Landfill On-Site) (See Closure with Waste in Place.)	Install two liners or more, a top liner that prevents waste migration into the liner, and a bottom liner that prevents waste migration through the liner.	RCRA hazardous waste (listed or characteristic) currently being placed in a new landfill.	40 CFR 264.301
	Install leachate collection systems above and between the liners.		40 CFR 264.301
	Construct run-on and run-off control systems capable of handling the peak discharge of a 25-year storm.		40 CFR 264.301
	Control wind dispersal of particulates.		40 CFR 264.301
	Inspect liners and covers during and after installation.		40 CFR 264.303
	Inspect facility weekly and after storms to detect malfunction of control systems or the presence of liquids in the leachate collection and leak detection systems.		40 CFR 264.303
	Maintain records of the exact location, dimensions, and contents of waste cells.		40 CFR 264.304
	Close each cell with a final cover after the last waste has been received.		40 CFR 264.310
	No bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids may be disposed of in landfills.		40 CFR 264.314
	Containers holding free liquids may not be placed in a landfill unless the liquid is mixed with an absorbent or solidified.		40 CFR 264.314
	Treatment by Best Demonstrated Available Technology before placement.	Placement of RCRA hazardous waste subject to land disposal restrictions.	40 CFR 268 (Subpart D)

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Containment (Construction of New Surface Impoundment On-Site) (See Closure with Waste in Place and Clean Closure.)	Use two liners, a top liner that prevents waste migration into the liner and a bottom liner that prevents waste migration through the liner throughout the post-closure period.	RCRA hazardous waste (listed or characteristic) currently being placed in a new surface impoundment.	40 CFR 264.220
	Design liners to prevent failure due to pressure gradients, contact with the waste, climatic conditions, and the stress of installation and daily operations.		40 CFR 264.221
	Provide leachate collection system between the two liners.		40 CFR 264.221
	Use leak detection system that will detect leaks at the earliest possible time.		40 CFR 264.221

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Dike Stabilization	Design and operate facility to prevent overtopping due to overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error.	Existing surface impoundment containing hazardous waste, or creation of new surface impoundment.	40 CFR 264.221
	Construct dikes with sufficient strength to prevent massive failure.		40 CFR 264.221
	Inspect liners and cover systems during and after construction.		40 CFR 264.226
	Inspect weekly for proper operation and integrity of the containment devices.		40 CFR 264.226
	Remove surface impoundment from operation if the dike leaks or there is a sudden drop in liquid level.		40 CFR 264.227
	At closure, remove or decontaminate all waste residues and contaminated materials. Otherwise, free liquids must be removed, the remaining wastes stabilized, and the facility closed in the same manner as a landfill.		40 CFR 264.228
	Manage ignitable or reactive wastes so that it is protected from materials or conditions that may cause it to ignite or react.		40 CFR 264.227

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Direct discharge of treatment system effluent	Use of best available technology (BAT) economically achievable is required to control toxic and nonconventional pollutants. Use of best conventional pollutant control technology (BCT) is required to control conventional pollutants. Technology-based limitations may be determined on a case-by-case basis.		40 CFR 122.44(a)
	Applicable Federally approved State water quality standards must be complied with. These standards may be in addition to or more stringent than other Federal standards under the CWA.		40 CFR 122.44 and State regulations approved under 40 CFR 131
	Applicable Federal water quality criteria for the protection of aquatic life must be complied with when environmental factors are being considered.		50 FR 30784 (July 29, 1985)
	The discharge must conform to applicable water quality requirements when the discharge affects a state other than the certifying state.		40 CFR 122.44(d)
	The discharge must be consistent with the requirements of a Water Quality Management plan approved by EPA water (WA 208(6)).		
	Discharge limitations must be established for all toxic pollutants that are or may be discharged at levels greater than that which can be achieved by technology-based standards.		40 CFR 122.44(e)
	Develop and implement a BMP program and incorporate in the NPDES permit to prevent the release of toxic constituents to surface waters.		40 CFR 125.100

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SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Direct discharge of treatment system effluent (cont.)	<p>Permit application information must be submitted including a description of activities, listing of environmental permits, etc.</p> <p>Monitor and report results as required by permit (minimum of at least annually)</p> <p>Comply with additional permit conditions such as:</p> <ul style="list-style-type: none"> o Duty to mitigate any adverse effects of any discharge; and o Proper operation and maintenance of treatment systems. 	<p>On-site discharges to surface waters are exempt from procedural NPDES permit requirements. <u>c/</u> Off-site dischargers would be required to apply for and obtain an NPDES permit.</p>	<p>40 CFR 122.21</p> <p>40 CFR 122.44(i)</p> <p>40 CFR 122.41(i)</p>
Direct discharge to ocean	<p>Discharges causing "unreasonable degradation of the marine environment" are not permitted.</p> <p>Determination of whether a discharge will cause unreasonable degradation of the marine environment is based on consideration of:</p> <ul style="list-style-type: none"> o Quantity, composition, or persistence of pollutants to be discharged. o Potential transport of pollutants by biological, chemical, or physical processes. o Composition and vulnerability of exposed communities. o Importance of the receiving water to spawning, migratory paths, and surrounding biological community. 		<p>40 CFR 125.123(b)</p> <p>40 CFR 125.122</p>

c/ Section 121 of SARA exempts on-site CERCLA activities from obtaining permits. However, the substantive requirements of a law or regulation must be met.

EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Direct discharge to ocean (cont.)	<ul style="list-style-type: none"> o Existence of special aquatic sites. o Impact on human health and commercial fishing. <p>Comply with the limiting permissible concentration (LPGs) at the mixing zone boundary that are established in the permit.</p> <p>Permit applicants may be required to submit the following: analyses of chemical constituent of the discharge and the affected biological community, appropriate bioassays necessary to determine LPCs, a description of the facility and treatment process, and evaluations of alternative disposal options.</p> <p>Permit applicants shall be required to comply with a monitoring program specified in the permit. This program must assess the impact of the discharge on water, sediment, and biological quality.</p>		<p>40 CFR 125.123(d)(1)</p> <p>40 CFR 125.124</p> <p>40 CFR 125.123</p>
Discharge to POTW <u>d/</u>	<p>Pollutants that pass-through the POTW without treatment, interfere with POTW operation, or contaminate POTW sludge are prohibited.</p> <p>Specific prohibitions preclude the discharge of pollutants to POTWs that:</p> <ul style="list-style-type: none"> o Create a fire or explosion hazard in the POTW; o Are corrosive (pH<5.0); o Obstruct flow resulting in interference; 		40 CFR 403.5

d/ Same regulations apply regardless of whether remedial action discharges into the sewer or trucks waste to POTW. Point of reference is entry of pollutants into treatment system as the POTW.

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EXHIBIT 1-3 (continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Discharge to POTW (cont.)	<ul style="list-style-type: none"> o Are discharged at a flow rate and/or concentration that will result in interference; and o Increase the temperature of wastewater entering the treatment plant that would result in interference, but in no case raise the POTW influent temperature above 104°F (40°C). o Discharge must comply with local POTW pretreatment program, including POTW-specific pollutants, spill prevention program requirements, and reporting and monitoring requirements. o RCRA permit-by-rule requirements must be complied with for discharges of RCRA hazardous wastes to POTWs by truck, rail, or dedicated pipe. 		<p>40 CFR 403.5 and local POTW regulations</p> <p>40 CFR 264.71 and 264.72</p>
Discharge of dredge and fill material to navigable waters	<p>The four conditions that must be satisfied before dredge and fill is an allowable alternative are:</p> <ul style="list-style-type: none"> o There must be no practicable alternative. o Discharge of dredged or fill material must not cause a violation of State water quality standards, violate any applicable toxic effluent standards, jeopardize an endangered species, or injure a marine sanctuary. o No discharge shall be permitted that will cause or contribute to significant degradation of the water. o Appropriate steps to minimize adverse effects must be taken. <p>Determine long- and short-term effects on physical, chemical, and biological components of the aquatic ecosystem.</p>		<p>40 CFR 230.10 33 CFR 320-330</p>

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Dredging	Removal of all contaminated soil.	RCRA hazardous waste placed at site after November 19, 1980, or movement of hazardous waste from one unit, area of contamination, or location into another unit or area of contamination.	See Closure in this Exhibit.
Excavation	Area from which materials are excavated may require cleanup to levels established by closure requirements.	RCRA hazardous waste placed at site after November 19, 1980, or movement of hazardous waste from one unit, area of contamination, or location into another unit or area of contamination.	See Closure in this Exhibit.
	Movement of excavated materials to new location and placement in or on land will trigger land disposal restrictions.	Materials containing RCRA hazardous wastes subject to land disposal restrictions.	40 CFR 268 (Subpart D)
Gas Collection	<u>Proposed</u> standards for control of emissions of volatile organics [CAA requirements to be provided.]	Proposed standard; not yet ARAR.	52 FR 3748 (Feb. 5, 1987)
Ground-Water Diversion	Excavation of soil for construction of slurry wall may trigger cleanup or land disposal restrictions.	RCRA hazardous waste placed at site after November 19, 1980, or movement of hazardous waste from one unit, area of contamination, or location into another unit or area of contamination.	See Consolidation.

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Incineration (On-Site)	Analyze the waste feed.	RCRA hazardous waste.	
	Dispose of all hazardous waste and residues, including ash, scrubber water, and scrubber sludge.		40 CFR 264.341
			40 CFR 264.351
	No further requirements apply to incinerators that only burn wastes listed as hazardous solely by virtue of combination, and if the waste analysis that no appendix VII constituent is present that might reasonably be expected to be present.		40 CFR 264.340
	Performance standards for incinerators:		
	o Achieve a destruction and removal efficiency of 99.99% for each principal organic hazardous constituent in the waste feed and 99.9999% for dioxins; and		40 CFR 264.343
	o Reduce hydrogen chloride emissions to 1.8 kg/hr or 1% of the HCl in the stack gases before entering any pollution control devices.		40 CFR 264.342
	Monitoring of various parameters during operation of the incinerator is required. These parameters include:		40 CFR 264.343
	o Combustion temperature;		
	o Waste fee rate;		
	o An indicator of combustion gas velocity; and		
	o Carbon monoxide.		
	Special performance standard for incineration of PCBs.		40 CFR 761.70

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions <u>b/</u>	Requirements	Prerequisites	Citation
Land Treatment	Ensure that hazardous constituents are degraded, transformed, or immobilized within the treatment zone.	RCRA hazardous waste.	40 CFR 264.271
	Maximum depth of treatment zone must be no more than 1.5 meters (5 feet) from the initial soil surface; and more than 1 meter (3 feet) above the seasonal high water table.		40 CFR 264.271
	Demonstrate that hazardous constituents for each waste can be completely degraded, transformed, or immobilized in the treatment zone.		40 CFR 264.271
	Minimize run-off of hazardous constituents.		40 CFR 264.273
	Maintain run-on/run-off control and management system.		40 CFR 264.273
	Special application conditions if food-chain crops grown in or on treatment zone.		40 CFR 264.276
	Unsaturated zone monitoring.		40 CFR 264.278
	Special requirements for ignitable or reactive waste.		40 CFR 264.281
Operation and Maintenance (O&M)	Special requirements for incompatible wastes.		40 CFR 264.282
	Special requirements for RCRA hazardous wastes.	RCRA waste #s F020, F021, F022, F023, F026, F027.	40 CFR 264.283
	Post-closure care to ensure that site is maintained and monitored.		40 CFR 264.1

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Slurry Wall	Excavation of soil for construction of slurry wall may trigger cleanup or land disposal restrictions.	RCRA hazardous waste placed at site after November 19, 1980, or movement of hazardous waste from one unit, area of contamination, or location into another unit or area of contamination.	See Consolidation, Excavation in this Exhibit.
Surface Water Control	Prevent run-on and control and collect run-off from a 24-hour 25-year storm (waste piles, land treatment facilities, landfills).		40 CFR 264.251(c).(d) 40 CFR 264.273(c).(d) 40 CFR 264.301(c).(d)
	Prevent over-topping of surface impoundment.		40 CFR 264.221(c)

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Tank Storage (On-Site)	Tanks must have sufficient shell strength (thickness), and, for closed tanks, pressure controls, to assure that they do not collapse or rupture.	RCRA hazardous waste listed or characteristic), held for temporary period before treatment, disposal, or storage elsewhere, (40 CFR 264.10) in a tank.	40 CFR 264.190
	Waste must not be incompatible with the tank material unless the tank is protected by a liner or by other means.		40 CFR 264.191
	Tanks must be provided with controls to prevent overfilling, and sufficient freeboard maintained in open tanks to prevent overtopping by wave action or precipitation.		40 CFR 264.194
	Inspect the following: overfilling control, control equipment, monitoring data, waste level (for uncovered tanks), tank condition, above-ground portions of tanks, (to assess their structural integrity) and the area surrounding the tank (to identify signs of leakage).		40 CFR 264.195
	Repair any corrosion, crack, or leak.		40 CFR 264.196
	At closure, remove all hazardous waste and hazardous waste residues from tanks, discharge control equipment, and discharge confinement structures.		40 CFR 264.197
	Store ignitable and reactive waste so as to prevent the waste from igniting or reacting. Ignitable or reacting. Ignitable or reactive wastes in covered tanks must comply with buffer zone requirements in "Flammable and combustible Liquids Code," Tables 2-1 through 2-6 (National Fire Protection Association, 1976 or 1981).		40 CFR 264.198

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Treatment	<p><u>Proposed</u> standards for miscellaneous units (long term retrievable storage, thermal treatment other than incinerators, open burning, open detonation, chemical, physical, and biological treatment units using other than tanks, surface impoundments, or land treatment units) require new miscellaneous units to satisfy environmental performance standards by protection ground water, surface water, and air quality, and by limiting surface and subsurface migration.</p> <p>Treatment of wastes subject to ban on land disposal must attain levels achievable by best demonstrated available treatment technologies (BDAT) for each hazardous constituent in each listed waste.</p> <p>BDAT standards for spent solvent wastes and dioxin-containing wastes are based on one of four technologies or combinations: for waste waters, (1) steam stripping, (2) biological treatment, or (3) carbon absorption (alone or in combination with (1) or (2); and for all other wastes, incineration. Any technology may be used, however, if it will achieve the concentration levels specified.</p>	<p>Proposed as standard; not yet ARAR.</p> <p>All wastes listed as hazardous in 40 CFR Part 261 as of November 8, 1984, except for spent solvent wastes and dioxin-containing wastes, have been ranked with respect to volume and intrinsic hazards, and are scheduled for land disposal prohibition and/or treatment standard determinations as follows: at least one-third by August 8, 1988; at least two-thirds by June 8, 1989; and all remaining ranked and listed hazardous wastes by May 9, 1990.</p> <p>Determinations of land disposal prohibitions and/or treatment standards for any hazardous wastes identified or listed under RCRA Section 3001 after November 8, 1984, must be made within six months of the date of identification or listing.</p> <p>Determinations of land disposal prohibitions and/or treatment standards for all hazardous wastes identified by characteristic (i.e., corrosivity, reactivity, ignitability, and EP Toxicity) under RCRA Section 3001 are scheduled for May 9, 1990.</p> <p>EPA is not precluded from requiring treatment for any scheduled wastes before or after the scheduled deadlines.</p> <p>Effective November 8, 1988, disposal of contaminated soil or debris resulting from CERCLA response actions or RCRA corrective actions is subject to land disposal prohibitions and/or treatment standards established for spent solvent wastes, dioxin-containing wastes, and "California List" wastes.</p> <p>Effective November 8, 1988, disposal of spent solvent and dioxin-containing wastes resulting from CERCLA response actions or RCRA corrective actions is subject to land disposal prohibitions and/or treatment standards.</p>	<p>50 FR 40726 (Nov. 7, 1986) 40 CFR 264 (Subpart X)</p> <p>40 CFR 268.10 40 CFR 268.11 40 CFR 268.12</p> <p>40 CFR 268.13</p> <p>40 CFR 268.12</p> <p>RCRA Sections 3004(d)(3),(e)(3) 42 U.S.C. 6924(d)(3),(e)(3)</p>

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Underground injection of Wastes and Treated Ground Water <u>a/</u>	UIC program prohibits:		40 CFR 144.12
	o Injection activities that allow movement of contaminants into underground sources of drinking water and results in violations of MCLs or adversely affects health.		
	o Construction of new Class IV wells, and operation and maintenance of existing wells.		40 CFR 144.13
	Wells used to inject contaminated ground water that has been treated and is being reinjected into the same formation from which it was drawn are not prohibited if activity is part of CERCLA or RCRA actions.		40 CFR 144.14
	All hazardous waste injection wells must also comply with the RCRA requirements.		40 CFR 144.16
	The Director of the UIC program in a State may lessen the stringency of 40 CFR 144.23 construction, operation, and manifesting requirements for a well if injection does not occur into, through, or above a USDW or if the radius of endangering influence (see 40 CFR 146.06(c)) is less than or equal to the radius of the well.		40 CFR 144.21
	Owners and operators must:		40 CFR 144.26 40 CFR 144.27
	o Submit inventory information to the Director of the UIC program for the State; including hydrogeologic data for wells, construction record, nature or composition of injected fluids, injection rate and pressure, and ground-water monitoring data.		

a/ Class I wells and Class IV wells are the relevant classifications for CERCLA sites. Class I wells used to inject hazardous waste, beneath the lowermost formation containing, within one quarter mile, an underground source of drinking water (USDW). Class IV wells used to inject hazardous or radioactive waste into or above a formation which within 1/4 of a mile of the well contains an underground source of drinking water.

EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Underground injection of Wastes and Treated Ground Water (cont.)	o Report non-compliance orally within 24 hours.		40 CFR 144.28
	o Prepare, maintain, and comply with plugging and abandonment plan.		
	Monitor Class 1 wells by:		
	o frequent analysis of injection fluid,		
	o continuous monitoring of injection pressure,		
	o flow rate, and volume and,		
	o installation and monitoring of ground-water monitoring wells.		
	Applicants for Class 1 permits must:		40 CFR 144.55
	o Identify all injection wells within the area of review.		
	o Take action as necessary to ensure that such wells are properly sealed, completed, or abandoned to prevent contamination of USDW.		
	Criteria for determining whether an aquifer may be determined to be an exempted aquifer include current and future use, yield, and water quality characteristics.		40 CFR 146.4
	Case and cement all Class 1 wells to prevent movement of fluids into USDW, taking into consideration, well depth, injection pressure, hole size, composition of injected waste and other factors.		
	Conduct appropriate logs and other tests during construction and a descriptive report prepared and submitted to the UIC program director.		

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EXHIBIT 1-3 (Continued)

SELECTED ACTION-SPECIFIC PROBABLE ARAR REQUIREMENTS a/

Actions b/	Requirements	Prerequisites	Citation
Underground Injection of Wastes and Treated Ground Water (cont.)	<p>Injection pressure may not exceed a maximum level designed to ensure that injection does not initiate new fractures or propagate existing ones and cause the movement of fluids into a USDW.</p> <p>Continuous monitoring of injection pressure, flow rate, and volume, and annual pressure, if required.</p> <p>Demonstration of mechanical integrity is required every 5 years.</p> <p>Ground-water monitoring may also be required.</p>		40 CFR 146.13
Waste Pile	<p>Use linear and leachate collection and removal system.</p>	<p>RCRA hazardous waste, non-containerized accumulation of solid, nonflammable hazardous waste that is used for treatment or storage.</p>	40 CFR 264.251

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